

AMERICAN DENDROBATID GROUP

Newsletter No. 11

September-October 1993

The purpose of the ADG is to develop better communication between Dendrobatid breeders in North America. It is designed by its format and bi-monthly distribution to keep dendrobatid frog breeders in better communication with one another. We hope that with this communication we will be able to solve some of the problems which confront us all. This newsletter will appear bimonthly and will cost \$5.00 annually to cover printing and mailing.

Subscriptions, comments, etc. should be sent to Charles Powell (2932 Sunburst Dr., San Jose, CA 95111 Tel.: (408) 363-0926) or Terry Chatterton (P. O. Box 622, Kiowa, CO 80117. Tel.: (303) 621-2442).

Notes from the Editor

We are coming to the close of our second year and already the Newsletter has over 50 members in the USA and Europe. When Terry and I first started this newsletter, we envisioned it as being a single page (front and back) for people to learn about new literature, sell frogs, and, in general, promote communication between Dendrobatid breeders. By the end of the first year we were already adding articles and it has expanded more and more since then. What this is all leading up to is starting with 1994 the cost will be increased to \$10 per year. I think you will all understand that with increasing printing and mailing costs, along with the larger size of the Newsletter this is necessary.

If you haven't turned in your Survey (mailed with Issue #10) please take the time to fill it out and return it to the above address now. The data on this form will be held confidential and distributed only to members of the ADG, as a supplement to issue #12. It is hoped that these data will encourage communication and aid in developing breeding loans. Please keep this information confidential.

Issues 1 through 6 (1992) are available for \$5.00. Anyone who has ordered these issues and didn't receive #4, please drop me a postcard and I'll get it in the mail to you right away.

Epipedobates tricolor in captivity

Shawn Eric Malolepsy

Epipedobates tricolor (Boulenger, 1899) are native to the Andes Mountains on the Pacific side of Ecuador. A wide array of color and size variations exist between populations. These frogs are terrestrial, semi-territorial, hardy and easy to breed in captivity. Adult frogs range from 0.75 to 1.2 inches (20 to 30 cm) with males generally being smaller and thinner. Markings consist of two medial stripes and a dorsolateral stripe of one color with two medial stripes of another color. The two sets of stripes and the base color of the frog give

it the specific name tricolor. The ventrum of the frog can be mottled or spotted. Many frogs have "flash marks" of red or orange on either the forearms or back legs, usually behind the knee or elbow area. The completeness of all the aforementioned marking can be highly variable. Some frogs appear to be one color and lack all characteristic markings. The hardiness of this frog has allowed it to inhabit both wet and dry forests, as well as thriving in developed lands.

My frogs are kept in a terrarium measuring 15"x24"x25" (33-gal.) and is made of glass except for half of the top which is aluminum screen and a removable front panel which is Plexiglas. A one inch high false bottom of egg crate (a sheets used for fluorescent lighting) supported by PVC pipe and wrapped in a porous flower bed liner provides adequate drainage and prevents souring of the substrate. The substrate is potting soil covered with peat moss and sloped from 4" in the back to 1" in front. Plants include the crouton *Cordiaum*, the ti plant *Cordyline*, *Spathiphyllum*, *Philodendron*, *Peperomia*, *Pothos*, and various ferns. Driftwood provides anchoring areas for bromeliads (which are not essential for breeding *tricolor*) as well as providing different levels in the terrarium for the males to set up territories. The floor is covered with sphagnum moss and littered with magnolia leaves. A water dish 5" in diameter and made from a flower pot saucer filled to a depth of 1" is placed in the front of the terrarium. There are breeding huts in the terrarium but the frogs have never used them.

The terrarium is illuminated by three 20-watt fluorescent bulbs which are switched on for 12 hours a day; General Electric® and full spectrum day lights are used. Temperatures can range from 65°F to 85°F during a year depending on the season. Average temperatures range from about 72°F to 82°F. The terrarium is sprayed both morning and evening to keep the humidity high. The frogs are fed pin head crickets and fruit flies three to five time a week. Once a week the food is dusted with vitamin and calcium supplements such as Tetra® or Nekton®.

The vocal repertoire of tricolor makes keeping them enjoyable. The males will squeak and chatter when wrestling or chasing each other during territorial squabbles, feeding frenzies, and during territorial disputes, when a rival males will attempt to jump on the opponent and push him to the ground. The long melodious trill call of an advertising male can last for several seconds and vary in intensity. Calls can be heard at any time of the day, but almost always after the tank is sprayed or the frogs are fed. The trill call is quite loud and can be heard from outside the frog room.

Breeding *E. tricolor* is easy if the frogs are kept under the right conditions. The parents will do most of the work up until the male deposits the larvae in the water dish. The male will trill from a high perch in the terrarium until a willing female approaches him. The female will allow the male to grasp her from behind and place his fore arms just behind her head. This is the primitive mating behavior amplexus is common to frogs of the genus *Epipedobates*. The male then leads her to a spawning site of his choice where the eggs are laid. The male then wets and fertilizes the eggs, and will attempt to guard the clutch from other frogs looking for an easy meal.

Egg clutches have been found on most of the taller plants in the terrarium when the frogs started breeding. Since then most of the eggs have been found in the leaf litter at the

bottom of the terrarium. I do not disturb the leaf litter unless I have watched the courting and have a good idea of where to look for the clutch. All eggs that are laid out in the open are removed and artificially incubated in a petri dish with enough water to allow the top of the clutch to be exposed to air. A very small amount of mold inhibitor is added to the water, Mtegosept or methyl paraben $C_8H_8O_3$ works well. The eggs hatch in 10 to 14 days when the larvae are about 11 mm long. The larva are placed in plastic cups filled with about 1 inch of water. Tadpoles from a single clutch can be raised together without cannibalism, but there is a great difference in size between tadpoles and some of the smaller will not grow well and subsequently die. Each attempt of group rearing yielded less than 20% of the larvae reaching froglet stage. When larva were reared separately they were all closer to the same size and nearly 100% of the tadpoles reached froglet stage. The size of the clutch depends on the age and fitness of the female, with clutch sizes varying from 6 to 21 eggs in my terrarium, although the literature's reports clutches from 15 to 40 eggs.

Once the larvae are about a week old an iodine supplement is added to the water. Before I used iodine most of the larvae that reached the froglet stage suffered from spindly-leg syndrome (SLS). Since I started using iodine there have been no froglets with SLS and over 60 frogs completing metamorphosis. I use Thyrodine® by Mardel Laboratories at a rate of 10 drops per 24 oz of water. The water in the cup is changed every day or every other day depending on the time I have available. The larvae have been feed Tetramarin® flake food. The larvae will complete development of the hind legs after about 30 days and be about 27 mm long. At about 38 days the front limbs are complete and the larvae is now about 25 mm long. The tail is fully absorbed at about 46 days and the froglet is then about 22 mm long and will emerge from the water at about this time. All times periods and lengths are averages calculated from the larvae I have successfully reared. The tiny froglets will climb up the sides of the cups before their tails are fully absorbed so a tight fitting lid is needed to prevent escape of the froglets. The water level in the cup is lessened as the frog limbs develop to help prevent drowning.

The froglets are then kept in a plastic sweater box lined with sphagnum moss and littered with magnolia leaves. They are fed daily small fruit flies and newly hatched crickets. I dust the food insects every other day to facilitate growth. The sweater boxes need to be washed out every two weeks and new moss and leaves added to prevent accumulation of feces and unwanted infections from occurring.

I am currently working with three different populations of *E. tricolor*. One is the small wine red frog with light blue stripes which was originally described as *E. anthonyi*. They are small (20 mm long) and have bred prolifically so far. I have a 4:2:1 population of these frogs and have been able to witness calling, courting and laying in the terrarium. The frogs have never used the breeding huts supplied for laying in the year since they have started breeding. I avoid bromeliads with them as the larvae that are transported to water are much easier to retrieve from the water dish. Searching bromeliad leaf bracts for larvae is to time consuming and those not found may starve to death. The second population are large (30 mm) red with creamy white and yellow stripes. I have 2:3:0 that have been together for five months now and I have observed calling, fighting, and attempted amplexus by the male but unfortunately no eggs have been found. These are by far the most

bold frogs in my collection, they do not flee unless the terrarium decor is physically moved. They also attack the plastic bag I use when feeding occurs. The third population are about 25 mm long and are milk chocolate brown with mint green stripes (2:2:0) and exhibit the most notable difference between males and females. The females have become very plump and fighting has increased lately, but so far no eggs. They were acquired at the same time as the red and yellow *E. tricolor* above.

Epipedobates tricolor is a superb frog for the beginning hobbyist because of their hardiness and eagerness to breed. The behavioral and vocal activities of these frogs make observing them intriguing and fun, even for an experienced hobbyist. There are also many problems to be solved with *E. tricolor*, such as the trend of captive bred frogs having thinner stripes than the parents and generally duller colors. I encourage every hobbyist to keep accurate records and experiment when problems arise or even when things are going well as there is always room for improvement. This will result in benefits for both the hobby overall and increase captive populations, decreasing the need for wild caught frogs in a time of ecological disaster in the South American rainforests.

Captive bred Dendrobatids needed for Research

Some inroads are being made into unraveling the mystery of Dendrobatid toxins. John Daly, together with Dendrobatid enthusiasts Anthony Wisnieski, Charles Nishihara, John Cover and several biochemists have found that populations of *Dendrobates auratus* from Isla Taboga, Panama, the central mountains of Panama, from the Caribbean coast in Costa Rica and from Oahu, Hawaii, have different spectra of toxins. They also confirmed that captive-bred frogs raised on termites and fruit flies contained the same profile of toxins, though at reduced levels as their wild-caught parents (Toxicon, 30(8): 887-898, 1992).

Since I retired from teaching medical school, I have started to breed various insects and spiders in order to systematically test their value as Dendrobatid food and substrates for the development of Dendrobatid toxins. I am trying to breed Dendrobatids in numbers sufficient for experiments, but finding it difficult, because usually only a fraction of the eggs are fertilized in each clutch. To this is added occasional mortality from bacterial infections of eggs, spindly leg and failure to thrive after metamorphosis.

Hence I am interested in acquiring groups of young captive-breed frogs, 1 to 2 months after metamorphosis. I would maintain them for approximately 3 months, test them for toxins by a non-destructive method, and would ship the frogs back to any contributor. John Daly will perform the toxin analysis.

Please contact me if you are interested in contributing frogs. Jack Frenkel (1252 Vallecita Dr., Santa Fe, NM 87501-8803. Tel & FAX: (505) 984-2520).

Adds: For Sale

<i>Dendrobates auratus</i> 'El Cope'	\$45	Charles Nishihara
(large, blue-green Panamanian form)		3271 Pinao St
<i>D. imitator</i>	\$65	Honolulu, HI 96822
<i>D. tinctorius</i> 'Colbolt'	\$30	(808) 988 3420

Dendrobates auratus 'Costa Rica' \$25

Sean Healy
3140 Savage Rd.
Sarasota, FL 34231

The Serpent's Egg (1809 Irving St., NW, Washington, D.C. 20010 Tel. (202) 462 9443) has various captive breed and wild caught frogs for sale. Write or call for information.

New Members

Shane Adamson (Kansas)
Gary Meltzer (California)
Cory Nudelman (Nevada)

New Literature

Forester, Don C., Cover, Jack, and Wisnieski, Anthony, 1993, The influence of time of residency on the tenacity of territorial defense by the dart-poison frog *Dendrobates pumilio*. *Herpetologica*, 49(1): 94-99.

Morales, Victor R., 1992, Dos Especies nuevas de *Dendrobates* (Anura: Dendrobatidae) para Peru. *Caribbean Journal of Science*: 28(3-4): 191-199.

Additions to Dendrobate species list (from ADG Newsletters, nos. 8, 9, and 10)

Dendrobates biolat Morales, 1992

Peru

Dendrobates lamasi Morales, 1992

Peru

Dendrobates tinctorius by Brian Monk



